

Amendments to the Claims

- 1 1. (currently amended) A method for partitioning an image including a
2 plurality of points into segments, comprising:
3 selecting a set of base points in the image;
4 initializing and emitting a wavefront from each base point;
5 propagating each wavefront according to a speed function until a
6 termination condition is satisfied to determine a corresponding final
7 wavefront; ~~and~~
8 segmenting the image according to each final wavefront; and
9 rendering the segmented image.
- 1 2. (original) The method of claim 1, further comprising:
2 constructing a gradient image from the input image;
3 constructing a variance image from the input image; and
4 selecting each base point iteratively in order of least gradient and
5 variance values in the respective gradient and variance images.
- 1 3. (original) The method of claim 2, in which a likelihood of selecting the
2 base point is inversely proportional to the gradient and variance values.
- 1 4. (original) The method of claim 2, in which the gradient image and the
2 variance image are constructed at hierarchical resolution levels.
- 1 5. (original) The method of claim 1, in which the initial wavefront is
2 substantially circular.

- 1 6. (original) The method of claim 1, in which the speed function varies
2 according to colors in the image.
- 1 7. (original) The method of claim 6, in which a speed of propagation
2 increases for adjacent points having a similar color and decreases for the
3 adjacent points having a dissimilar color.
- 1 8. (original) The method of claim 6, in which a speed of propagation
2 increases for adjacent points having a low average gradient magnitude and
3 decreases for the adjacent points having a high average gradient magnitude.
- 1 9. (original) The method of claim 6, in which a speed of propagation
2 increases for adjacent points having a low gradient magnitude on the normal
3 direction to the wavefront and decreases for the adjacent points having a
4 high gradient magnitude on the direction normal to the wavefront.
- 1 10. (original) The method of claim 1, in which the termination condition is a
2 color similarity of the points.
- 1 11. (original) The method of claim 1, in which the termination condition is
2 an edge in the image.
- 1 12. (original) The method of claim 1, in which the termination condition is
2 an arrival time of each wavefront.

1 13. (original) The method of claim 1, in which the speed function is
 2 constant.

1 14. (original) The method of claim 1, in which the speed function is varying.

1 15. (original) The method of claim 1, in which the propagating is performed
 2 iteratively using fast marching.

1 16. (original) The method of claim 15, further comprising:

2 choosing \mathbf{x}^* as a point in a narrow band set of points with a smallest
 3 arrival time $\psi(\mathbf{x}^*)$ of the wavefront;

4 moving point \mathbf{x}^* from the narrow band set of points to a current
 5 segment;

6 moving all neighboring points \mathbf{x}_j^* of the point \mathbf{x}^* into the narrow band
 7 set of points if the neighboring points are not in the narrow band set of
 8 points;

9 updating the arrival time $\psi(\mathbf{x}_j^*)$ for all the neighboring points of \mathbf{x}^* ,

10 updating a color mean for the current segment;

11 updating a color mean for the narrow band set of points;

12 increasing a total number of points in the current segment; and

13 updating a total number of points in the narrow band set of points.

1 17. (original) The method of claim 16, in which the color mean of the
 2 current segment is S_K , and updated the color mean by $S'_K = 1/N_K^t [N_K^{t-1} S_K +$
 3 $I(\mathbf{x}^*)]$, where t is time, and N_K is the total number of points in the current
 4 segment, and I is the image.

- 1 18. (original) The method of claim 16, in which the narrow band set of
2 points is the wavefront.
- 1 19. (original) The method of claim 16, in which the color mean of the
2 narrow band set of points is B'_K , and the color mean is updated by $B'_K =$
3 $1/M_{tK} [M^{*-1}_K B_K - I(\mathbf{x}^*_j) + \sum_j^C I(\mathbf{x}_j)]$, where M_K is the number of points in the
4 current narrow band set.
- 1 20. (original) The method of claim 16, in which the color mean S_K of the
2 current segment and the color mean of the narrow band set of points are used
3 to determine color similarity.
- 1 21. (original) The method of claim 16, in which a set of representative colors
2 for the current segment and a set of representative colors for narrow band set
3 of points are used to determine color similarity.